

## ABSTRACT

The present invention is directed to novel structures for use in connection with OLED devices that simultaneously act as a multilayer mirror and as a barrier to harmful species in the exterior environment. According to one embodiment of the invention, an OLED structure is provided that comprises: (a) a substrate; (b) an OLED over the substrate that comprises (i) a first electrode, (ii) an emission region above the first electrode and (iii) a second electrode above the emission region, wherein the OLED emits light having a range of wavelengths upon being turned on; and (c) a multilayer mirror over the substrate, the multilayer mirror comprising an alternating series of (i) planarizing layers having a first refractive index and (ii) high-density layers having a second refractive index that differs from the first refractive index. The thicknesses of the planarizing layers and of the high-density layers in this embodiment are selected such that the multilayer mirror is tuned to transmit light at a peak wavelength within the range of wavelengths emitted by the OLED. Moreover, the planarizing layers and the high-density layers cooperate to restrict transmission of water and oxygen.